

## COMMENTS ON MONTANA'S PROPOSED NUTRIENT CRITERIA

October 10, 2008

### General Comments

In general, I think the document is a thorough compilation of DEQ's nutrient work and proposed criteria. The technical basis for establishing criteria in the mountainous region is strong and solidly linked to impacts to a beneficial use (i.e., recreation).

For the other ecoregions, DEQ generally defers to EPA's recommended approach to use of the 75<sup>th</sup> percentile of reference. For the other ecoregions, the single stressor-response study fails to demonstrate a clear linkage to impacts to aquatic life use support. I suggest sticking with the 75<sup>th</sup> percentile for both the plains and transition zones using EPA's guidance as the basis for selecting that value.

### Specific Comments on Proposed Ecoregional Criteria

#### ➤ Mountain Criteria:

DEQ's proposes to use is the 90<sup>th</sup> percentile of reference which is the average of the stressor-response studies, including the plains. Was the 94<sup>th</sup> percentile considered as another option by removing the plains study? Page 41 states that the 90<sup>th</sup> percentile was based on consideration for statewide results. Since the values are applicable to a smaller area, shouldn't the percentile reflect the appropriate ecoregion?

#### ➤ Prairie Criteria:

DEQ's proposed prairie criteria are based on a diatom-inferred value that relates loosely to state standards for dissolved oxygen. This metric was developed based on a small study and hasn't been rigorously tested. Van Dam's autoecology metrics were developed for the Netherlands and haven't been tested in the US. The study does not link to a direct measure of aquatic life (e.g., Periphyton index) and attempts to link to an indirect measure of aquatic life (DO) using biologically inferred values.

Given some of the issues associated with the plains stressor-response study, a stronger rationale for use of the 75<sup>th</sup> percentile would be to defer to EPA's guidance on use of the 75<sup>th</sup> percentile of reference for both plains and transition streams. The concern with this approach is that it interprets harm to use as "deviation from reference" unless other, more definitive stressor-response studies can be found.

Considerations for refining the stressor-response study are provided below if DEQ chooses to cite that study as the primary rationale for establishing the proposed criterion:

- Additional calibration information (nighttime DO data were limited and only available from one site) would be helpful to confirm the analysis and to compare the biological inferences to raw data. Before considering this study as definitive, I recommend using an independent

dataset to confirm the results, verify that other parameters did not covary, and also to ensure they are applicable to the broader Plains ecoregion.

- There appears to be some inconsistent statements on what the inferred DO represents. On pg 70, it is stated that diatom OTI reflect nighttime DO concentrations and are compared to DO minimum criterion, but on pg 61 it is stated that the samples are best associated with the weekly DO standards?
- Were macroinvertebrate responses examined? Macroinvertebrates may demonstrate a stronger nutrient response that could be used to link to impacts to the aquatic life use (see Yuan manuscript).
- Did DEQ consider compositional changes in the periphyton assemblage as it related to nutrients?
- Furthermore, additional clarification of what the DO inferred value represents and rational for why it is the preferred and most appropriate approach should be added to the body of the report. As far as I can tell, it is only mentioned in table 6.3, without any explanation.

➤ Transition Criteria:

DEQ proposes the 80<sup>th</sup> percentile for transition areas. Why not use the 75<sup>th</sup> using EPA guidance as the rationale?

### **Editorial Comments on Proposed Ecoregional Criteria**

Table 7.1 identifies that the Idaho Batholith ecoregion will be updated when  $n \geq 12$ , yet table 6.2 indicated that 50 nutrient samples that were collected during the growing season are available. Was a subsample of the 50 used for the criteria analysis? If so, why?

Appendix I. Please edit pages I-2. The section 1.2.1 on Use Classifications suggests that the IR categories are the Use Classifications that comprise water quality standards. I would revise this information to describe designated uses assigned to a waterbody, not the IR category.